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(54) **MACHINE FOR SUPPLYING BEVERAGE-CONTAINING CUPS AND SIMILAR ARTICLES.**

(57) The machine is comprised of a cabinet with thermo-insulating protection (1) wherein is housed a refrigerating unit (3) and a plurality of compartments (7, 7a, 7b) inside which are provided tracks where the products to be supplied may slide by gravity, said products being intercepted towards the end of the travel by two devices (12, 12a and 12b) adapted for different types of containers, the above-men-

tioned mechanisms being actuated by introducing in the machine the appropriate coins. The solution of adapting to each type of container the appropriate supply device avoids the risk of damaging the containers or cups and, as a consequence, results in a considerable reduction of the width size of the machine.

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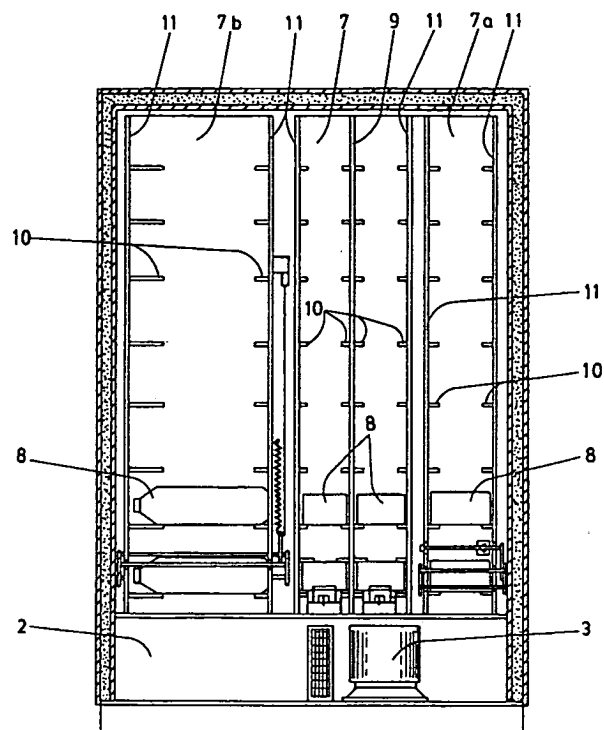


Fig. 3

The present description relates, as indicated in the title, to a machine for supplying beverage-containing packages and similar articles, of the type employed for selling refrigerated products such as beverages, water, drinks in general and other products, said machines generally working in automatic form by means of introducing the required coins.

The machines known at present for the distribution of the above-mentioned products incorporate mechanisms that act by means of coins which once introduced, they send the releasing order so that a retention mechanism supplies one package.

This type of machines have the inconvenience that their regulating mechanism for starting and retaining requires large spaces for their location which would require considerable dimensions for the machine especially in relation to their width.

Another inconvenience which said known machines usually present is that the cans or bottles of products which are stored inside the machine in the form of a pile, suffer important deterioration and sometimes breakages when the supplying command is activated due to the fact that the lowermost packages bear the weight of the entire pile.

Another kind of inconvenience which said machines usually present is that their supplying mechanisms are only able to act upon packages of the same dimension although the packages may contain different products.

In order to overcome said inconveniences the machine for supplying beverage-containing packages and similar articles, as the object of the present invention, is hereby proposed in which a plurality of interior compartments is provided said compartments comprising of multiple guides in the form of zig-zag which allow the container packages to slide down until a releasing device which is activated when the required coins are introduced. Additionally a variety of releasing devices are provided which are able to control the supply of container packages of different volumes.

The machine herein presented has the advantage, with respect to the known machines, that the storage arrangement of the products in compartments with sliding guides in the form of tracks in zig-zag provides that the packages to be released do not support the weight of the pile with which the risk of breakages and deformations of packages is eliminated.

Another advantage of this invention is that by incorporating the appropriate mechanism of distribution for each type of package, space is saved which allows for a smaller width of machine for the same capacity of products.

Another advantage of our machine consists of making possible, by means of the above-men-

tioned mechanisms, for the machine to sell container packages of different characteristics and volumes.

The machine comprises a cabinet with thermo-insulating protection in which a refrigerating unit, of the type used for this kind of apparatus, is located.

The interior of said cabinet is divided into compartments inside of which a plurality of inclined guides are situated in form of zig zag which form a track over which the container packages slide due to their weight or the force of gravity. The guides which form the aforementioned tracks are constituted by a number of flanges secured on facing sides of the parallel walls that divide the cabinet into compartments.

There exists the possibility of having only one set of guides on one side which is formed by wings the width of which exceeds at least half-way over the length of the guided articles said wings are transversally inclined in sloped position towards the respective wall.

At the end of each guide, and situated on the front side of a collecting box, the regulating mechanism both for supply and for retaining of products is located in an inaccessible manner from the outside. The machine herein proposed may be equipped by one or multiple mechanisms of different nature as to the characteristics and volume of the products to be supplied by the vending machine.

The object of the present invention will be better understood by means of the accompanying drawings representing a preferred practical embodiment of the same is which:

Figure 1 shows a general perspective view of the machine.

Figure 2 shows a transversal cross-section of the machine.

Figure 3 shows a longitudinal cross-section of the machine.

Figure 4 shows a detail of the front elevation view of the inclined guide.

Figure 5 shows a perspective of a device for releasing and retaining products with lateral driving arrangement.

Figure 6 shows a detail of the front elevation view of the device for releasing and retaining products with lateral driving arrangement.

Figure 7 shows a detail of a lateral elevation of the mechanism of lateral driving of the limiting rods in standby position.

Figure 8 shows a view similar to the previous one but with the limiting bars at the moment of releasing the article.

Figure 9 shows a perspective view of a device for releasing and retaining the products with the driving arrangement located on the front upper side of the product to be released (similar to the

device shown in figure 5).

Figure 10 shows a detail of lateral elevation of the mechanism for releasing and retaining articles with front-upper driving arrangement in position of blocking the article ready to be sold.

Figure 11 shows a view similar to that of figure 10 with said mechanism in the position of releasing the product situated in the first place while at the same time blocks the way to the one situated immediately after.

Figure 12 shows an upper view of the mechanism of figures 9, 10 and 11 partially cross-sectioned.

Figure 13 shows a perspective of a device for releasing and retaining articles with the driving arrangement situated underneath the product ready to go out.

Figure 14 shows a longitudinal cross-section of the device of figure 13 in position of blocking or standby.

Figure 15 shows a view similar to that of the previous one adopting the position for releasing the package while the one immediately after remains intercepted.

The machine for supplying beverage-containing packages and similar articles, object of the present invention, incorporates a cabinet (1) with walls protected by a thermo-insulating material. The cabinet has a lower compartment (2) in which a refrigerating unit (3) is located.

On the front part, the cabinet is equipped with a large window (4) in which information may be placed in relation to the articles that the machine supplies. Additionally the cabinet (1) is equipped with a front opening (5) on the lower part which provides access to a tray (6) on which the supplied articles will fall.

The inside of the cabinet is divided into three compartments (7), (7a) and (7b) in which packages (8) of beverages or any other similar article with different volume and form are stored.

The compartment (7), intended to contain packages of smaller dimensions than those of compartments (7a) and (7b) is formed by walls (11) and is divided in two vertical racks by means of a partition (9) which separates said racks having on facing walls thereof a plurality of inclined tracks (10) which descend in zig zag on which tracks the articles (8) (packages, bottles, cans and other articles of similar form) are situated which are capable of sliding over the tracks (10) due to the action of the force of gravity. The lower end (10a) of tracks (10) lead to trays (6).

The compartments (7a) and (7b) intended to be used for placing packages or articles (9) of larger dimensions than those placed in compartment (7) are formed by walls (11) and vertical racks which form the aforementioned compartment (7).

For the type of articles (8a) which are not completely cylindrical (Fig. 4), guiding wings are provided which are inclined in descending position towards wall (11), only one wing being necessary when articles (8a) rest on wing (10a) and the wall itself.

All tracks (10) included in different compartments lead at their lowermost end and before reaching the tray (6) have respective devices (12), (12a) and (12b) whose characteristics will be described hereinbelow.

Device (12) (Fig. 5) with lateral driving arrangement (Fig. 5) is proposed for packages of considerable dimensions within the type of products which generally are dealt with, and is formed by a pair of transversal rods (13 and 14), parallel to the longitudinal axis of bodies (8) to be supplied, the ends of said rods pass through arched openings (15) provided on walls (11) being connected to oscillating plates (16) around axis (17). The rods (13) and (14) are set at a distance with respect to each other.

Close to one of the plates (16) a plaque (18) is mounted which oscillates around an axis (19) having an extension or a lever (20) situated between either of the ends of rods (13) and (14) (Figures 7 and 8) pushing them alternatively. Plaque (18) is joined to the end of a cross-bar (21) activated by means of an electro-magnetic (22) mechanism the operation of which is bound by a conventional coin-receiver of the kind commonly known for this type of machines. Moreover, plaque (18) is urged by a spring (23) which forces plaque (18) to remain stable at its two possible positions at which, as indicated before, pushes one rod and the other by means of lever (20) (Figures 6, 7 and 8).

It is thus evident that if through the coin-receiver the electro-magnetic mechanism (22) is activated, the cross-bar (21) activates the plaque (18) which was maintained resting against rod (13) and displaces said plaque towards the opposite direction against rod (14), which is displaced towards the rear side in such a form that rod (13) releases the first article (8) and retains the one immediately after (Fig. 8). In the second movement of the electro-magnetic mechanism (22) the whole assembly returns to the position of figure 7 and all articles descend one space. Rods (13) and (14) permit the retaining of articles of larger length such as bottles, but they can also retain and supply smaller articles such as cans and small bottles.

The release and retaining device (12a) (Fig. 9), located on the front upper part of the package to be taken out, is similar as to its principles of operation to the device (12) described above and is intended to use for packages of medium and small size. This mechanism consists of a pair of rods (24) and (25) horizontally situated in front of an exit opening (26) of a compartment (7a) located be-

tween two particular walls (11).

The ends of rods (24) and (25) pass through arched openings (27) provided on walls (11) of compartment (7a). Said ends are joined with two plates (28) which oscillate around pivots (29).

In the drawings only one plate is represented on one end of the rods, however there is one plate on the external side of each wall.

In a position higher than that occupied by plates (28) plaques (30) are situated which oscillate around an axis (31), at least one of which being equipped with an extension (32) in the form of a lever situated between either one of the ends of (24) and (25).

Plaques (30) are connected to each other by means of a horizontal rod (33) parallel to rods (24) and (25) having their ends guided into respective arched openings (27a).

Rod (33) is attached to a moving arm (35) which is activated by means of an electromagnetic mechanism (36) mounted inside compartment (7a).

The electromagnetic mechanism (36) is activated once the required coins have been deposited in a conventional coin-receiving mechanism (not shown) in such a form that arm (35) pulls the oscillating plaque (30) and the extension thereof (32) pushes rod (25) so that the whole assembly of the two rods (24) and (25) together with plates (28). Rod (24) releases the first article (8) which goes out through tile opening (26) of compartment (7a), while at the same time rod (25) blocks the second article (8b). When the action of the electromagnetic mechanism (36) is ceased, spring (34) returns rod (33), plaque (30) and the assembly of rods (24) and (25) and plate (28) to its original position.

The device for releasing and retaining products (12b) (Fig. 13) with the driving arrangement located on the lower part of article (8) ready to be released is proposed with respect to handling adequately products such as cans of drinks, small bottles and similar packages having in mind the saving of space in order to confer the machine a smaller width.

The device shown with the general reference number (12b) is located close to the end of tracks (10a) (Fig. 2) and below said tracks in which an opening (37) has been formed through which only the limiting rods (42) or (43) pass.

The device (12b) consists of a support box (38) with two wings (39) in which an axis (40) is located for the rotation of a swinging device (41) of bi-stable position which comprises two transversal rods (42) and (43) joined to the lateral walls (41a) said rods being located transversally with respect to the direction of the tracks (10). Rod (42) is in a closer position to the end (10a) of tracks than rod (43).

On lateral walls (41a) of swinging device (41) a transversal axis (44) is mounted on which two elbow levers (45) are articulated by one end (45a) thereof and situated next to the lateral inside walls of box (38), while an end (45b) opposite to the one articulated to axis (44) is articulated to a transversal rod (46). The ends of the rod (46) are guided in extended openings (47) of lateral walls of box (38).

On the elbows of levers (45) roller sets (48) are mounted resting on waved tracks (49) such as a cam having an upper concave track (49a) which forms seating in order to stabilize the position of levers (45).

On rod (46) the end of a spring (50) is attached which tends to maintain the device in a stable position of standby, wherein rod (42) passes over the plane on which the end (10a) of track (10) is located.

Rod (46) is joined to the end of a bracket (51) displaceable by longitudinal movements in relation to the direction of the ends of tracks (10), being activated through rod (52) by an electro-magnet (53) or a similar electro-mechanical mechanism, which in turn is activated by depositing the coins corresponding to the price of the package (8) which is to be bought in a conventional coin-receiver installed in the cabinet (1) itself. The displacement transmitted from the electro-magnet to bracket (51) is in a direction opposite to that of restitution of spring (50).

In front of opening (37) of tracks (10) and on an upper plane, wings (54) are situated which are parallel to tracks (10) and ends (10a) having the particularity that the distance measured between wings (54) and tracks (10) is somewhat larger than the diameter of packages (8) which move on the tracks.

In the position of standby of device (12b) rod (42) extends over through opening (37) of track (10) in such a form that package (8) which is situated at the end of the track is intercepted between said extension and the upper wings (54) (Fig. 14 of the drawings). When the electro-magnet (53) is activated by depositing the required coins in the coin-receiver, rod (52) pulls bracket (51) and by means of transversal axis (46) the elbow arms (45) are displaced the roller sets (48) of which leave housings (49a) of waved tracks (49). Arms (45) perform a double movement since in addition to displacement on tracks (49), they oscillate supported by their roller sets (48) and urge the swinging device (41) to tilt around its axis (40) in such a form that the front rod (42) is hidden beneath opening (37) and releases package (8) located at the end of tracks (10) descending from the end (10a) and reaching the corresponding tray (6). At the same time, rod (43) is lifted and intercepts the package (8c) situated immediately after the re-

leased package (Fig. 15). When the swinging device (41) recovers the initial standby position activated by the return spring (50), rod (42) intercepts the package that follows the released package and the standby position represented in Figure 14 is restored.

Having sufficiently described the nature of the present invention, together with one way of putting it into practice, it is to be understood that it is possible to introduce changes in form, materials, and disposition over all the invention over the parts that it is composed of, as long as such alterations do not vary substantially the characteristics of the invention claimed as follows:

### Claims

1. Machine for supplying beverage-containing packages and similar articles, characterized in that it is composed of a cabinet with thermo-insulating protection equipped with a refrigerating unit, said cabinet being divided in a plurality of compartments of different dimensions, inside which multiple guides are arranged being independent with respect to each other and inclined in a descending position in form of tracks over which the packages are displaced by gravity until the end of their path where there are devices adequate for each type of package, said packages being capable to retain the articles until they are released one by one by means of introducing the required coins into the machine.
2. Machine for supplying beverage-containing packages and similar articles, according to claim 1, characterized in that the general releasing and retaining device (12) has a bi-stable plaque articulated around an axis and attached to a transmission means which is activated by an electro-magnetic device an extension of which pushes alternatively two rods in order to locate them at the positions of holding and releasing the articles said plaque being urged by a spring which tends to be stabilized in one position or the other which it can adopt.
3. machine for supplying beverage-containing packages and similar articles, according to claim 1, characterized in that the releasing and retaining device of general reference -12a-, is formed by a pair of rods parallel with respect to each other, being attached at their ends to oscillating plates, situated close to the external side of the walls of the compartment which stores the packages, the displacement or the rotation of the mentioned rods is performed in

relation to the guiding provided by arched openings provided on the walls of the compartment in which the device is located, said rods being activated by means of an oscillating plaque in form of a lever situated close to one of the oscillating plates and mounted at one end between the rods in order to push one or the other rod according to the required movement, be it in standby due to the urging of the spring or in the product releasing; the movement of the lever plaque which activates the rods in order to serve an article is performed by means of an axis secured thereto which is activated by a cross-bar attached to a electro-magnet, the latter being activated when the required coins are introduced in the coin-receiver. The guiding of the axis which activates the lever plaque is carried out by means of arched openings inside the walls of the compartment.

4. Machine for supplying beverage-containing packages and similar articles, according to claim 1, characterized in that the releasing and retaining device of general reference number (12b) is formed by two transversal limiting elements with respect to the direction of the guides, displaced with respect to each other in such a form that one of them occupies a position closer to the lower end of the guide than the other, capable of adopting two positions, one for interception and the other for releasing the packages, alternating one after the other, said limiting elements are related to a swinging device which tends to maintain itself in a standby position in which the limiting element closer to the lower end of the guide intercepts the passage of the packages, said swinging device being activated by an electro-mechanic mechanism in connection to a coin-receiver device capable of situating the limiting elements in working position in which the limiting element closer to the lower end of the guide release the first package which is ready to fall on the tray, while the other limiting element immobilizes the immediately next product, essentially characterized in that the devices of general reference number (12b) regulating the exit of the products and the corresponding electro-mechanic mechanisms are situated below the lower end of the corresponding guide with the particularity that the transversal limiting elements (42) and (43) of said devices pass over on the upper side with respect to the guides (10) when they are in the position of interception and they hide below said guides when they are in the position of releasing the packages.